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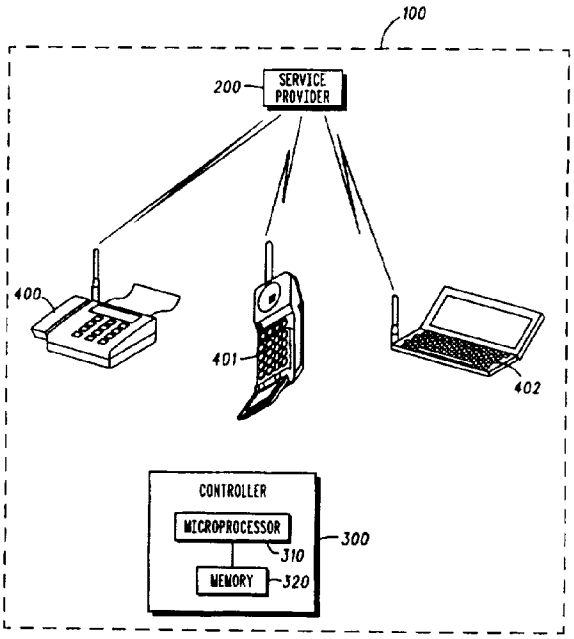
(54) Title: A TELECOMMUNICATIONS SYSTEM AND A METHOD OF PROVIDING SERVICES TO TERMINALS IN SUCH A SYSTEM

(57) Abstract

A telecommunications system (100) includes a service provider (200) providing a plurality of services to a plurality of terminals (400, 401, 402). A controller (300) having a user identifier stored therein can be associated with a reader in the terminal for reading the user identifier. A selector in the terminal (400) selects one or more of the plurality of services to be associated with the user identifier. A transmitter transmits to the service provider (200) user-service information corresponding to the user identifier and information as to the selected services. The service provider (200) receives the user-service information and determines from which service provision area the user-service information was transmitted. A service provision controller determines that a particular service is to be provided to the user and a determining means determines whether the particular service is included in the first set of selected services. A paging message having paging information corresponding to the user-service information is then transmitted to the service provision area. The terminal (400) receives that paging message and responds to the service provider (200) if it can accept the service.



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# A Telecommunications System and a Method of Providing Services to Terminals in such a System

## Field of the Invention

This invention relates to a telecommunications system and particularly to a telecommunications system providing a number of different types of services, e.g. voice telephony, fax, data transfer, paging, video, etc. to a number of different types of terminals, and to a method therefor.

## Background of the Invention

Telecommunications systems are offering an increasingly sophisticated set of services to end users. For example in the Global System for Mobile Communications (GSM), many new services, such as high speed circuit switched data, packet data services, etc., are planned for introduction in the next few years. The next generation of telecommunications systems, e.g. the Universal Mobile Telecommunications System (UMTS), is expected to have even more services available to the end user. The end user will be able to subscribe to a large number of different services and may require a plurality of different terminals for use with different services or sets of services. For example the end user may choose to have one terminal (mobile phone) for voice telephony services, a different terminal (fax machine) for fax services and yet another terminal (laptop computer) for packet data services. Of course, it is also possible to provide access to more than one service at one terminal.

It is desirable for the user to have one dialable number for all his telecommunications needs. In co-pending UK application number 9516870.4 filed by the present applicant there is disclosed a system in which a single user identifier is associated with a User Identity Module (UIM) in order to access a particular set of services by a particular terminal, the UIM is associated with the terminal and the user chooses the services to be available at the terminal. The user can then select a mode of operation of the terminal where the terminal will maintain that availability when the UIM is withdrawn from the terminal and repeat the process at a different terminal for a different set of services.

In known systems, when a service provider intends to deliver a service to a user, the service provider sends a paging message with a single identifier to locate the receiving terminal. Since in the above described system, there is a single user identity associated with a number of terminals offering different services, if the service provider seeks to deliver a service to that user identity, all the terminals will respond to the paging message. Thus the service provider will not know to which of the terminals the service should be provided.

Furthermore, if the different terminals have different mobilities, e.g. one terminal, such as a fax terminal, is fixed in one location, and other terminals, such as mobile phones or pagers, are movable to other locations, then if the mobile terminal re-locates to a diferent cell from that where the fixed terminal is located, then the service provider will not know to which cell the paging message should be sent.

## Summary of the Invention

Accordingly, in a first aspect, the invention provides a telecommunications system comprising:

a service provider providing a plurality of services;

a controller having a user identifier stored therein associated with a user;

at least one terminal for receiving one or more of the plurality of services, the terminal having:

a reader for reading the user identifier,

a first storage means coupled to the reader for storing the read user identifier,

a selector for selecting one or more of the plurality of services to be associated with the user identifier as a first set of selected services,

a second storage means coupled to the selector for storing the first set of selected services,

a transmitter coupled to the first and second storage means for transmitting to the service provider user-service information corresponding to the user identifier and information as to the first set of selected services;

wherein the service provider comprises:

a receiver for receiving the user-service information from the terminal,

a first storage means coupled to the receiver for storing the user-service information,

a locating means coupled to the receiver for determining from which service provision area the user-service information was transmitted,

a service provision controller for determining that a particular service is to be provided to the user,

determining means coupled to the service provision controller and to the first storage means for determining whether the particular service is included in the first set of selected services, and

transmitting means coupled to the first storage means, the locating means and the determining means for transmitting to the service provision area determined by the locating means a paging message having paging information corresponding to the user-service information, and wherein the terminal comprises:

receiving means for receiving that paging message, and

responding means coupled to the receiving means for responding to the service provider that it can accept the service.

In one embodiment, the service provider further comprises issuing means for issuing an alias identifier which is unique for the user-service information received from the terminal, and said transmitting means transmits the alias identifier to the terminal receiving means, wherein the paging message includes the alias identifier if the determining means determines that the particular service is included in the first set of selected services, the terminal receiving means recognising the alias identifier when the paging message is received.

Alternatively or additionally, the paging message can include information as to the particular service to be provided to the user, and the terminal further comprises a determinator for determining whether the particular service is included in the first set of selected services, wherein the responding means responds only if the determinator determines that the particular service is included in the first set of selected services.

In a further embodiment, the terminal further comprises issuing means for issuing a terminal identifier which is unique for the user-service information, and the terminal transmitting means transmits the terminal identifier to the service provider, wherein the service provider receiver receives the terminal identifier and the paging message includes the terminal identifier if the determining means determines that the particular service is included in the first set of selected services.

In a second aspect, the invention provides a method of providing one or more of a plurality of services to a terminal in a telecommunications system having a service provider providing the plurality of services, the method comprising the steps of:

associating a controller having a user identifier stored therein with the terminal;

reading, by the terminal, the user identifier from the controller,

selecting, by the terminal, one or more of the plurality of services to be associated with the user identifier as a first set of selected services,

transmitting, by the terminal, to the service provider user-service information corresponding to the user identifier and information as to the first set of selected services;

receiving, by the service provider, the user-service information transmitted from the terminal,

determining, by the service provider, from which service provision area the user-service information was transmitted,

determining, by the service provider, that a particular service is to be provided to the user,

determining, by the service provider, whether the particular service is included in the first set of selected services,

transmitting, by the service provider, to the service provision area a paging message having paging information corresponding to the user-service information,

receiving, by the terminal, that paging message, and

responding, by the terminal, to the service provider that it can accept the service.

In one embodiment, the method further comprises the step of: issuing, by the service provider, an alias identifier which is unique for the user-service information received from the terminal, the alias identifier being transmitted by the transmitting means to the terminal receiving means, wherein the paging message includes the alias identifier if the service provider determines that the particular service is included in the first set of selected services, the terminal recognising the alias identifier when the paging message is received.

Alternatively or additionally, the paging message may include information as to the particular service to be provided to the user, and the method preferably further comprises the step of: determining, by the

terminal, whether the particular service is included in the first set of selected services, wherein the terminal responds only if it determines that the particular service is included in the first set of selected services.

In a further embodiment, the method further comprises the steps of: issuing, by the terminal, a terminal identifier which is unique for the user-service information, transmitting, by the terminal, the terminal identifier to the service provider, receiving, by the service provider, the terminal identifier, wherein the paging message includes the terminal identifier if the terminal determines that the particular service is included in the first set of selected services.

## Brief Description of the Drawings

One embodiment of the invention will now be more fully described, by way of example, with reference to the drawings, of which:

FIG. 1 shows a telecommunications system according to one embodiment of the invention;

FIG. 2 shows in more detail a first embodiment of a terminal used in the system of FIG. 1;

FIG. 3 shows in more detail a first embodiment of a service provider used in the system of FIG. 1;

FIG. 4 shows in more detail a second embodiment of a terminal which can be used in a system similar to that of FIG. 1;

FIG. 5 shows in more detail a second embodiment of a service provider which can be used in a system similar to that of FIG. 1;

FIGS. 6 and 7 are flow charts showing the operation of the second embodiment of the terminal and service provider;

FIGS. 8 and 9 are flow charts showing the operation of the first embodiment of the system;

FIG. 10 shows in more detail a third embodiment of a terminal which can be used in a system similar to that of FIG. 1; and

FIGS. 11 and 12 are flow charts showing the operation of the third embodiment of the terminal and a service provider similar to that of the first embodiment.

## Detailed Description of the Drawings

Thus, as shown in FIG. 1, a telecommunications system 100 includes at least one service provider 200, a user set of terminals 400, 401

and 402 for use by an end user to use one or more services provided by the service provider(s) and a controller 300, which can be a so-called smartcard having a microprocessor 310 and a memory 320, having a single user identifier for the end user embedded therein.

The service provider 200 might choose to add more and more services as a means to compete for revenue and market share. In these circumstances, it is likely that an end user might purchase more than one terminal. Perhaps the user initially starts off with a basic voice terminal 401, such as a cellular telephone, and, not wishing to throw away his investment in the voice terminal, he subsequently decides to purchase a fax terminal 400 and also a voice and data terminal 402, such as a lap-top computer, rather than to buy a single more expensive terminal which supports all of the services. These three terminals together fulfil the same function as a more expensive integrated-services terminal.

Each terminal, for example a first embodiment of the terminal 400 shown in FIG. 2, includes a reader 410 for reading the user identifier that is stored in the memory 320 of the controller 300 and a first storage means 420, coupled to the reader 410, for storing the read user identifier. The reader 410 can be a contactless reader or can require contact with the controller 300, for example by inserting the controller 300 into a slot (not shown) in the terminal. The terminal also includes a transmitter 450, coupled to the first storage means 420, for communicating the stored information to the service provider via an antenna 455. A services selector 430, for selecting one or more of the plurality of services to be associated with the user identifier, is provided so that the user can choose which services, of those offered by the service provider, are required. The services selector 430 can be menu driven, if the terminal has a display, or can simply require the user to press buttons corresponding to services to be selected. Information regarding the selected services is coupled to and stored in a second storage means 440 coupled to the transmitter 450 for transmittal to the service provider together with the user identifier. In addition, the terminal 400 includes a receiver 460 for receiving paging messages from the service provider via the antenna 455 and a responding means 470, coupled to the receiver 460, which transmits a response to the service provider when the paging message is used to indicate that one of the services associated with the user identifier at this terminal is being invoked.

As shown in FIG. 3, a first embodiment of the service provider 200 includes a receiver 210 for receiving, via antenna 205, the user identifier

and information regarding selected services transmitted from the antenna 455 of the terminal 400 and a memory 220, coupled to the receiver 210 for storing the received user identifier and information regarding which services are currently selected for the particular user identifier. A locator 230 is also coupled to the receiver 210, for determining which service provision area the terminal was in when the user identifier and selected services was received at the receiver 210. A service provision controller 240 determines whether or not a particular service for which a service invocation is being attempted is to be provided to the user. A processor 250 is coupled to the service provision controller 240, the locator 230 and the memory 220. The processor 250 determines whether a particular service is included in the set of currently selected services. A transmitter 260 is coupled to the processor 250, the locator 230 and the memory 220 for transmitting paging messages to the terminal 400 via antenna 205.

A second embodiment of this invention is shown in FIGS. 4 and 5. As shown in FIG. 4, the service provider 200, which includes the same elements as the embodiment of FIG. 3 with the same reference numerals, also contains an alias generator 270, coupled to the memory 220, for generating a unique alias identifier which corresponds to the user identifier and one associated set of user services. This unique alias identifier is stored in the memory 220 of the service provider and is transmitted to the terminal 400 via the antenna 205. The terminal 400, shown in FIG. 5 with the same elements as the embodiment of FIG. 2 having the same reference numerals, also contains an alias store 480, coupled to the receiver 460 and responding means 470, for storing the alias identifier.

In the second embodiment of this invention, the configurations shown in FIGS. 1, 4 and 5 are employed using the steps illustrated by the flow chart shown in FIG. 6. In step 600, a registration attempt is made for a selected set of services and the service provider 200 determines that a valid registration attempt has been made, for example as described in co-pending UK application number 9516870.4 mentioned above. In step 605, the alias generator 270 generates a unique alias identifier to correspond to the set of selected services for which the registration attempt is successful. In step 610, the unique alias identifier and the corresponding set of selected services and the corresponding user identity are stored in the memory 220 of the service provider 200 such that the correspondances are retained. In step 615, the unique alias identifier and the successful status of the registration attempt is transmitted to the

terminal 400 using the tranmitter 260. In step 620, the unique alias identifier and the successful status of the registration attempt is received by the terminal 400 using the receiver 460. In step 625, the alias identifier is stored in the alias store 480. This sequence can be repeated for further sets of selected services at other terminals, as shown by step 630.

In this second embodiment, the alias identifier is used during the location update procedures of the system. These location update procedures are well known in the art. As a result of location update procedures, the service provider can retain accurate information as to the present location of each terminal associated with each respective alias identifier. This function is provided by the locator 230 in the service provider 200.

In this embodiment, the appropriate terminal 400 needs to be accessed by the service provider 200 in order to deliver one of the services in one of the sets of selected services to that terminal in accordance with the steps shown in FIG. 7. Upon receiving an incoming call attempt, as shown by step 700, for a particular service and a particular called user identity, the service provision controller 240 tests to see whether the user is authorised to receive this type of call, as shown by step 705. If not authorised, then the service provider 200 rejects the call, as shown in step 710. If authorised, the processor 250 reads the memory 220, as shown in step 715, to recover the alias identity which is associated with the service set for this user identity which contains the requested service. In step 720, the processor 250 retrieves the present location of the terminal associated with the alias identifier from the locator. In step 725, the terminal 400 is paged at the correct location by the transmitter 260 transmitting at least the alias identifier to the cell in which the terminal 400 is located. In step 730, the remaining call setup procedure is completed according to methods which are widely known in the art.

In the first embodiment, the service provider is configured in the same manner as in the second embodiment, with the exception that no alias generator 270 is present, as shown in FIG. 3. The terminal 400 is configured in the same manner as in the second embodiment with the exception that no alias store 480 is presentas shown in FIG. 2.

In this first embodiment of the invention, the steps illustrated by the flow chart shown in FIG. 8 are used to register the various sets of selected services. In step 800, a registration attempt is made for a selected set of services and the service provider 200 determines that a

valid registration attempt has been made, for example as described in co-pending UK application number 9516870.4 mentioned above. In step 810, the set of selected services and the corresponding user identity are stored in the memory 220 of the service provider 200 such that the correspondances are retained. In step 815, the successful status of the registration attempt is transmitted to the terminal 400 using the tranmitter 260. In step 820, the successful status of the registration attempt is received by the terminal 400 using the receiver 460. This sequence can be repeated for further sets of selected services at other terminals, as shown by step 830.

In this first embodiment, the appropriate terminal 400 needs to be accessed by the service provider 200 in order to deliver one of the services in one of the sets of selected services to that terminal in accordance with the steps shown in FIG. 9. Upon receiving an incoming call attempt, as shown in step 900, for a particular service and a particular called user identity, the service provision controller 240 tests to see whether the user is authorised to receive this type of call, as shown in step 905. If not authorised, then the service provider 200 rejects the call, as shown by step 910. If authorised, the processor 250 retrieves the present location of the terminal 400 associated with the service from the locator 230, as shown in step 920. In step 925, the terminal 400 is paged at the correct location by the transmitter 260 transmitting a paging message including at least the called user identifier and the service being invoked to the cell in which the terminal is located. In step 927, each terminal which receives the paging message checks to see whether the paging message is, firstly, for a user identifier associated with that terminal, and secondly, whether the service being invoked is one of the set(s) of selected services associated with that user identifier at this terminal. If this test fails, then the paging message is ignored, if the test passes, the paging message is responded to by the terminal. Where the terminal responds to the paging message, this is followed by step 930 in which the remaining call setup procedure is completed according to methods which are widely known in the art.

In a third embodiment, the service provider 200 is configured in the same way as in the first embodiment shown in FIG. 3, with a terminal identifier being stored in the memory 220. The terminal 400 is configured, as shown in FIG. 10, in the same manner as in the second embodiment with the exception that instead of the alias store 480, there is provided a terminal ID store 490, which stores a permanent terminal identifier.

In the third embodiment of this invention, steps illustrated by the flow chart shown in FIG. 11 are used to register for service access. In step 1000, a registration attempt is made for a selected set of services and the service provider 200 determines that a valid registration attempt has been made, for example as described in co-pending UK application number 9516870.4 mentioned above. As part of this registration procedure, the terminal identifier is tranmitted to the service provider 200. In step 1010, the terminal identifier and the corresponding set of selected services and the corresponding user identity are stored in the memory 220 of the service provider 200 such that the correspondances are retained. In step 1015, the terminal identifier and the successful status of the registration attempt is transmitted to the terminal 400 using the tranmitter 260. In step 1020, the terminal identifier and the successful status of the registration attempt is received by the terminal 400 using the receiver 460. This sequence can be repeated for further sets of selected services at other terminals, as shown by step 1030.

In this third embodiment, the appropriate terminal 400 needs to be accessed by the service provider 200 in order to deliver one of the services in one of the sets of selected services to that terminal in accordance with the steps shown in FIG. 12. Upon receiving an incoming call attempt, as shown in step 1100, for a particular service and a particular called user identity, the service provision controller 240 tests to see whether the user is authorised to receive this type of call, as shown by step 1105. If not authorised, then the service provider 200 rejects the call, as shown by step 1110. If authorised, the processor 250 reads the memory 220 to recover the terminal identifier which is associated with the service set for this user identity which contains the requested service, as shown by step 1115. In step 1120, the processor 250 retrieves the present location of the terminal associated with the alias identifier from the locator 230. In step 1125, the terminal 400 is paged at the correct location by the transmitter 260 transmitting at least the terminal identifier to the cell in which the terminal 400 is located. In step 1130, the remaining call setup procedure is completed according to methods which are widely known in the art.

It will be appreciated that although only three particular embodiments of the invention have been described in detail, various modifications and improvements can be made by a person skilled in the art without departing from the scope of the present invention.

Claims

1. A telecommunications system comprising:

a service provider providing a plurality of services;

a controller having a user identifier stored therein associated with a user;

at least one terminal for receiving one or more of the plurality of services, the terminal having:

a reader for reading the user identifier,

a first storage means coupled to the reader for storing the read user identifier,

a selector for selecting one or more of the plurality of services to be associated with the user identifier as a first set of selected services,

a second storage means coupled to the selector for storing the first set of selected services,

a transmitter coupled to the first and second storage means for transmitting to the service provider user-service information corresponding to the user identifier and information as to the first set of selected services;

wherein the service provider comprises:

a receiver for receiving the user-service information from the terminal,

a first storage means coupled to the receiver for storing the user-service information,

a locator coupled to the receiver for determining from which service provision area the user-service information was transmitted,

a service provision controller for determining that a particular service is to be provided to the user,

determining means coupled to the service provision controller and to the first storage means for determining whether the particular service is included in the first set of selected services, and

transmitting means coupled to the first storage means, the locator and the determining means for transmitting to the service provision area a paging message having paging information corresponding to the user-service information, and

wherein the terminal comprises:

receiving means for receiving that paging message, and

responding means coupled to the receiving means for responding to the service provider that it can accept the service.

2. A telecommunications system according to claim 1, wherein the service provider further comprises:

generating means for generating an alias identifier which is unique for the user-service information received from the terminal, and

second storage means coupled to the generating means and the transmitting means for storing the alias identifier;

wherein the transmitting means transmits the stored alias identifier to the terminal receiving means.

3. A telecommunications system according to claim 2, wherein if the determining means determines that the particular service is included in the first set of selected services, then the alias identifier is included in the paging information and the terminal receiving means includes recognising means coupled to the receiving means for recognising the alias identifier when the paging message is received.

4. A telecommunications system according to any one of claims 1 to 3, wherein the paging message includes information as to the particular service to be provided to the user, and the terminal further comprises a determinator coupled to the receiving means and the responding means for determining whether the particular service is included in the first set of selected services, and third storage means coupled to the determinator for storing information as to whether the particular service is included in the first set of selected services, wherein the responding means responds only if the determinator determines that the particular service is included in the first set of selected services.

5. A telecommunications system according to claim 1, wherein the terminal is provided with a unique terminal identifier and the transmitter transmits the terminal identifier in the user-service information.

6. A telecommunications system according to claim 5, wherein if the determining means determines that the particular service is included in the first set of selected services, then the terminal identifier is included in the paging information.

7. A method of providing one or more of a plurality of services to a terminal in a telecommunications system having a service provider providing the plurality of services, the method comprising the steps of:

associating a controller having a user identifier stored therein with the terminal;

reading, by the terminal, the user identifier from the controller,

selecting, by the terminal, one or more of the plurality of services to be associated with the user identifier as a first set of selected services,

transmitting, by the terminal, to the service provider user-service information corresponding to the user identifier and information as to the first set of selected services;

receiving, by the service provider, the user-service information transmitted from the terminal,

determining, by the service provider, from which service provision area the user-service information was transmitted,

determining, by the service provider, that a particular service is to be provided to the user,

determining, by the service provider, whether the particular service is included in the first set of selected services,

transmitting, by the service provider, to the service provision area a paging message having paging information corresponding to the user-service information,

receiving, by the terminal, that paging message, and

responding, by the terminal, to the service provider that it can accept the service.

8. A method according to claim 7, further comprising the step of:

generating, by the service provider, an alias identifier which is unique for the user-service information received from the terminal,and

transmitting the alias identifier to the terminal receiving means.

9. A method according to claim 8, wherein if the service provider determines that the particular service is included in the first set of selected services, then the alias identifier is included in the paging information, the terminal recognising the alias identifier when the paging message is received.

10. A method according to any one of claims 7 to 9, wherein the paging message includes information as to the particular service to be provided to the user, and the method further comprises the step of:

determining, by the terminal, whether the particular service is included in the first set of selected services, wherein the terminal responds only if it determines that the particular service is included in the first set of selected services.

11. A method according to claim 7, wherein the terminal is provided with a unique terminal identifier and the method further comprises the steps of:

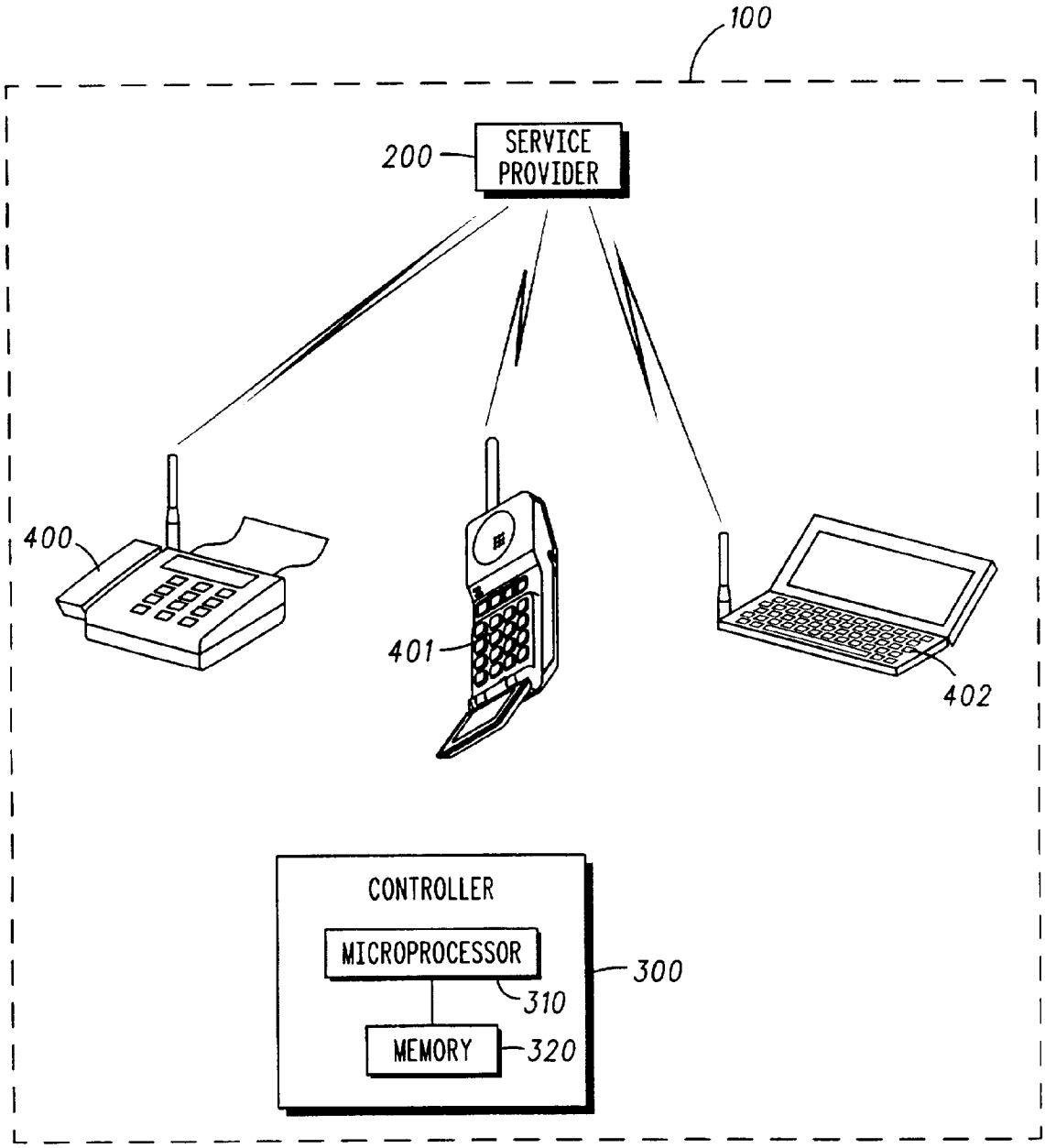
transmitting, by the terminal, the terminal identifier to the service provider,

receiving, by the service provider, the terminal identifier, and

including, by the service provider, the terminal identifier in the paging information if the service provider determines that the particular service is included in the first set of selected services.

12. A telecommunications system substantially as hereinbefore described with reference to the drawings.

13. A method of providing one or more of a plurality of services to a terminal in a telecommunications system having a service provider providing the plurality of services substantially as hereinbefore described with reference to the drawings.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402
CONTROLLER
MICROPROCESSOR
310
300
MEMORY
320

FIG.1

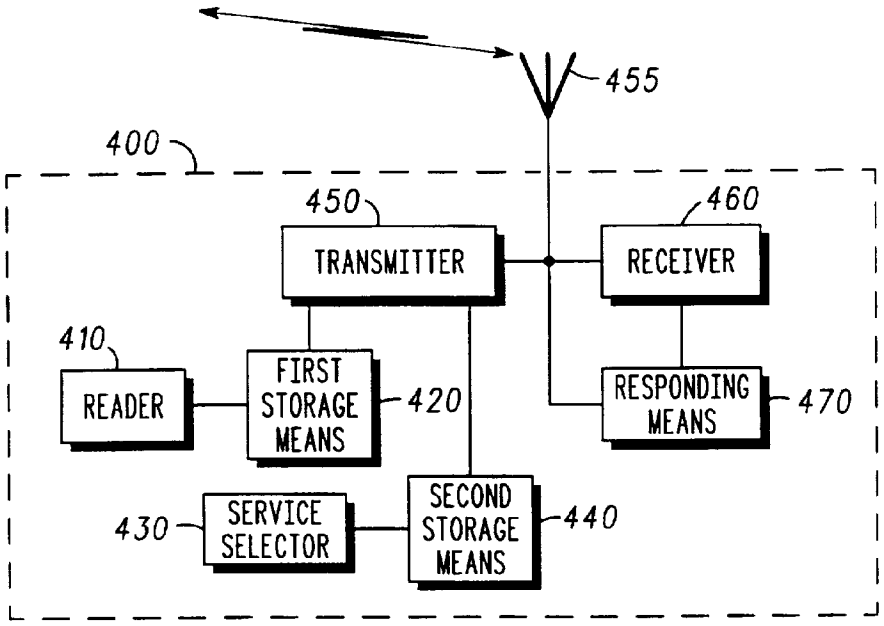

455
400
450
TRANSMITTER
460
RECEIVER
410
READER
FIRST STORAGE MEANS
420
RESPONDING MEANS
470
430
SERVICE SELECTOR
SECOND STORAGE MEANS
440

FIG. 2

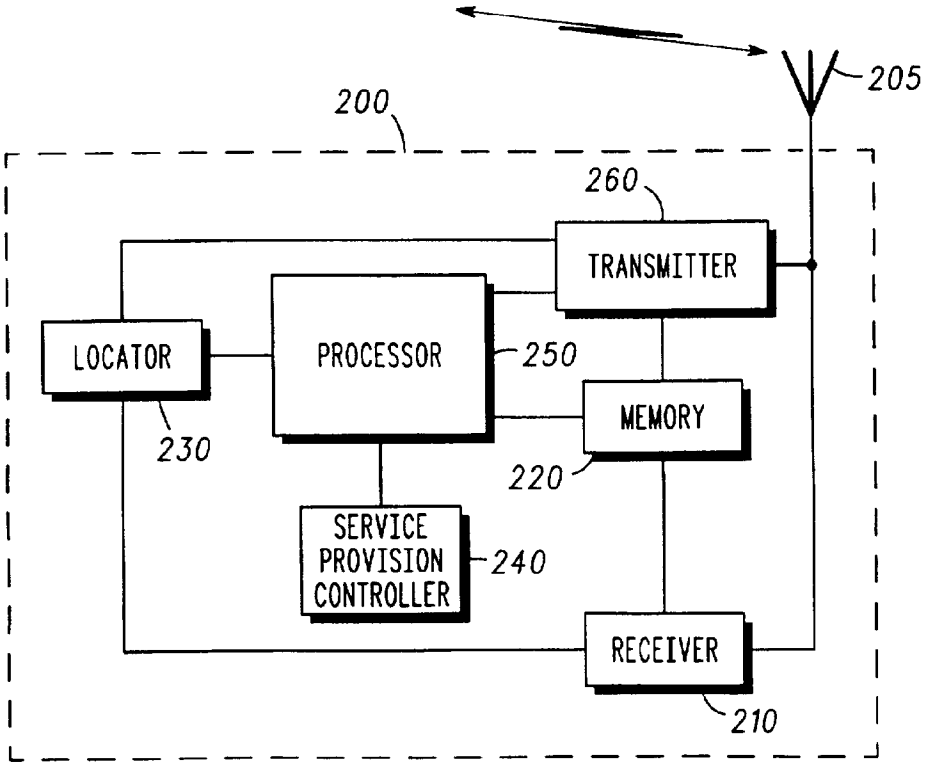

205
200
260
TRANSMITTER
LOCATOR
PROCESSOR
250
MEMORY
230
220
SERVICE PROVISION CONTROLLER
240
RECEIVER
210

FIG. 3

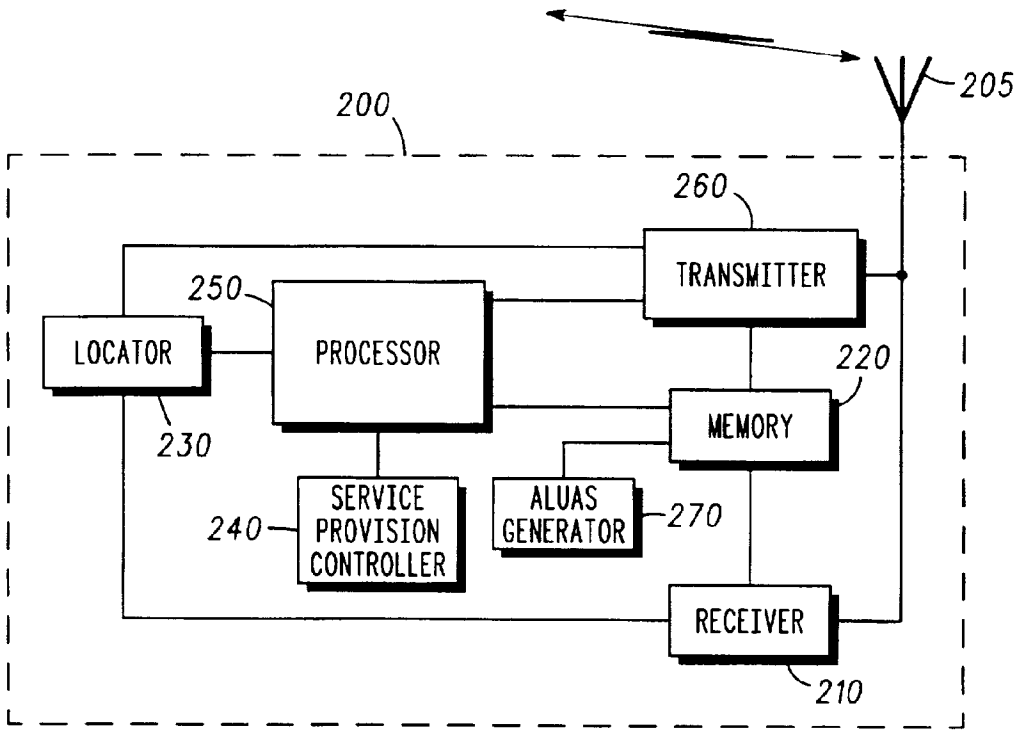

205
200
260
TRANSMITTER
250
LOCATOR
PROCESSOR
220
MEMORY
230
240
SERVICE PROVISION CONTROLLER
ALUAS GENERATOR
270
RECEIVER
210

FIG. 4

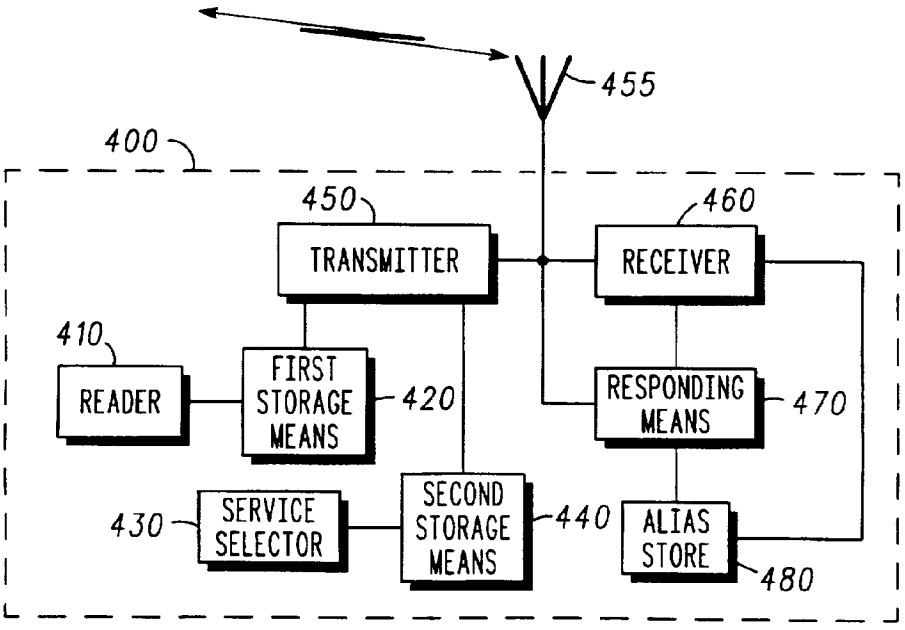

455
400
450
TRANSMITTER
460
RECEIVER
410
READER
FIRST STORAGE MEANS
420
RESPONDING MEANS
470
430
SERVICE SELECTOR
SECOND STORAGE MEANS
440
ALIAS STORE
480

FIG. 5

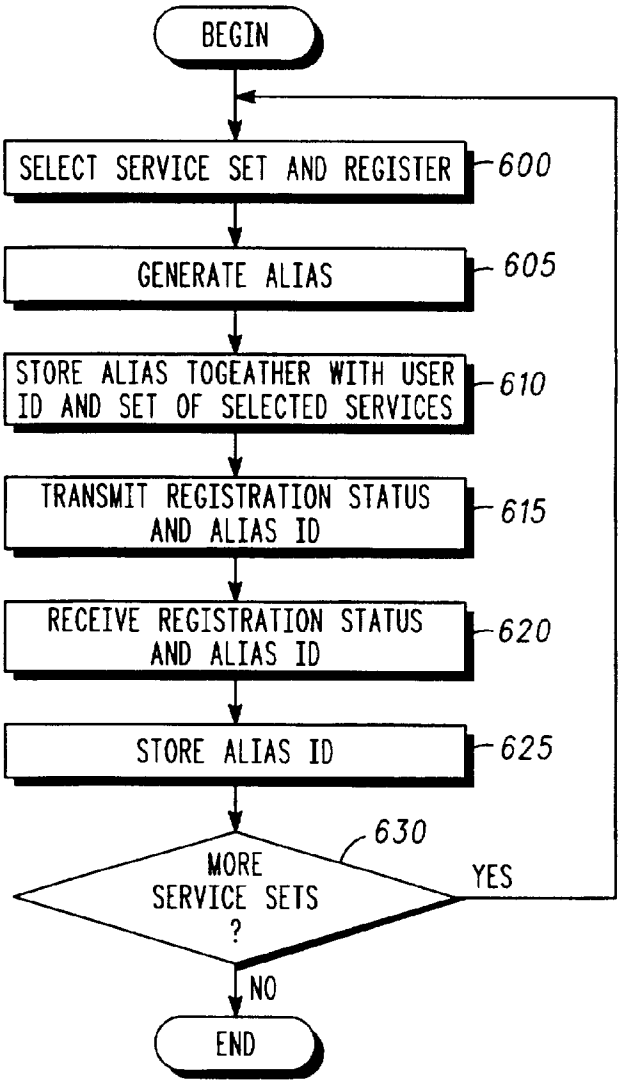

BEGIN
SELECT SERVICE SET AND REGISTER
600
GENERATE ALIAS
605
STORE ALIAS TOGEATHER WITH USER ID AND SET OF SELECTED SERVICES
610
TRANSMIT REGISTRATION STATUS AND ALIAS ID
615
RECEIVE REGISTRATION STATUS AND ALIAS ID
620
STORE ALIAS ID
625
630
MORE SERVICE SETS ?
YES
NO
END

FIG. 6

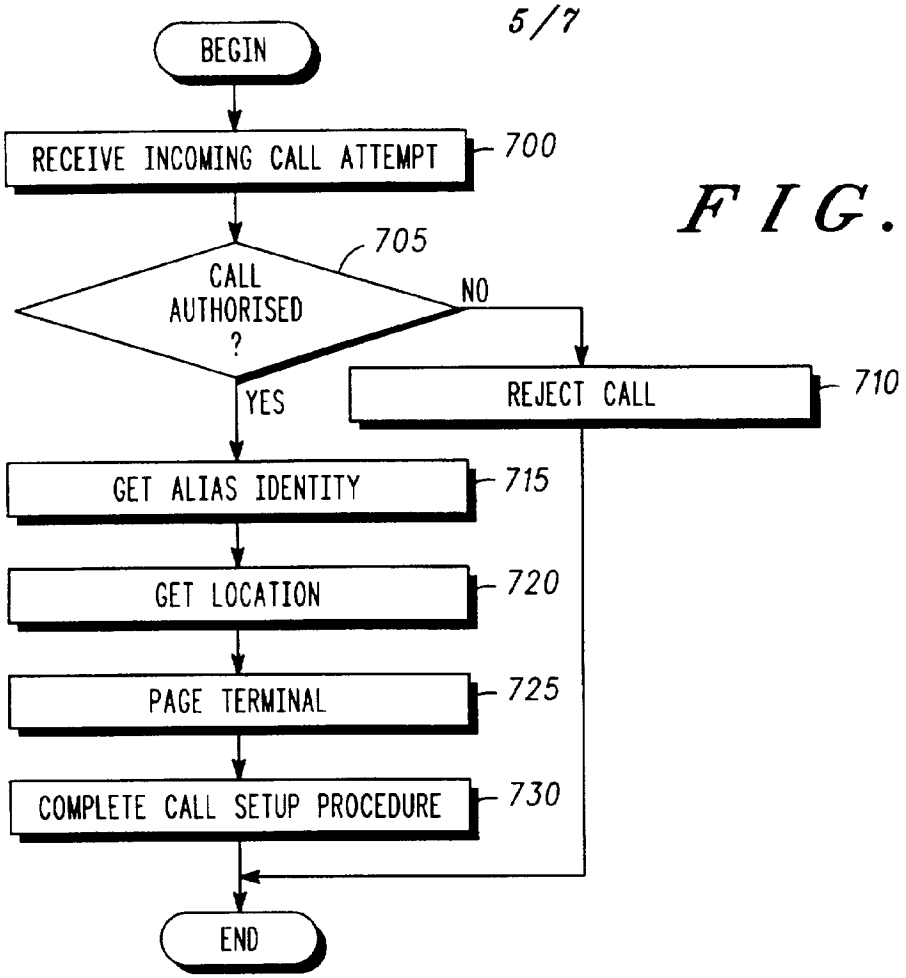

BEGIN
RECEIVE INCOMING CALL ATTEMPT
700
CALL AUTHORISED ?
705
NO
YES
REJECT CALL
710
GET ALIAS IDENTITY
715
GET LOCATION
720
PAGE TERMINAL
725
COMPLETE CALL SETUP PROCEDURE
730
END

FIG.7

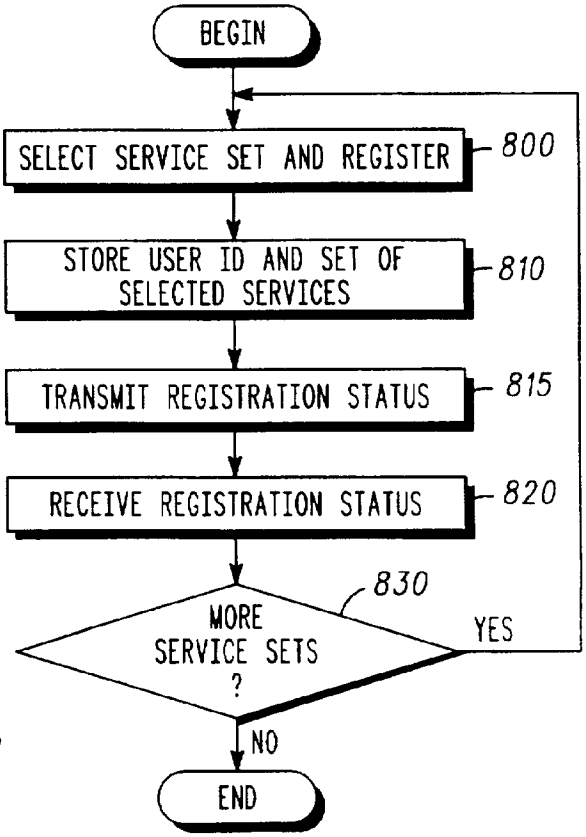

BEGIN
SELECT SERVICE SET AND REGISTER
800
STORE USER ID AND SET OF SELECTED SERVICES
810
TRANSMIT REGISTRATION STATUS
815
RECEIVE REGISTRATION STATUS
820
MORE SERVICE SETS ?
830
YES
NO
END

FIG.8

FIG.9

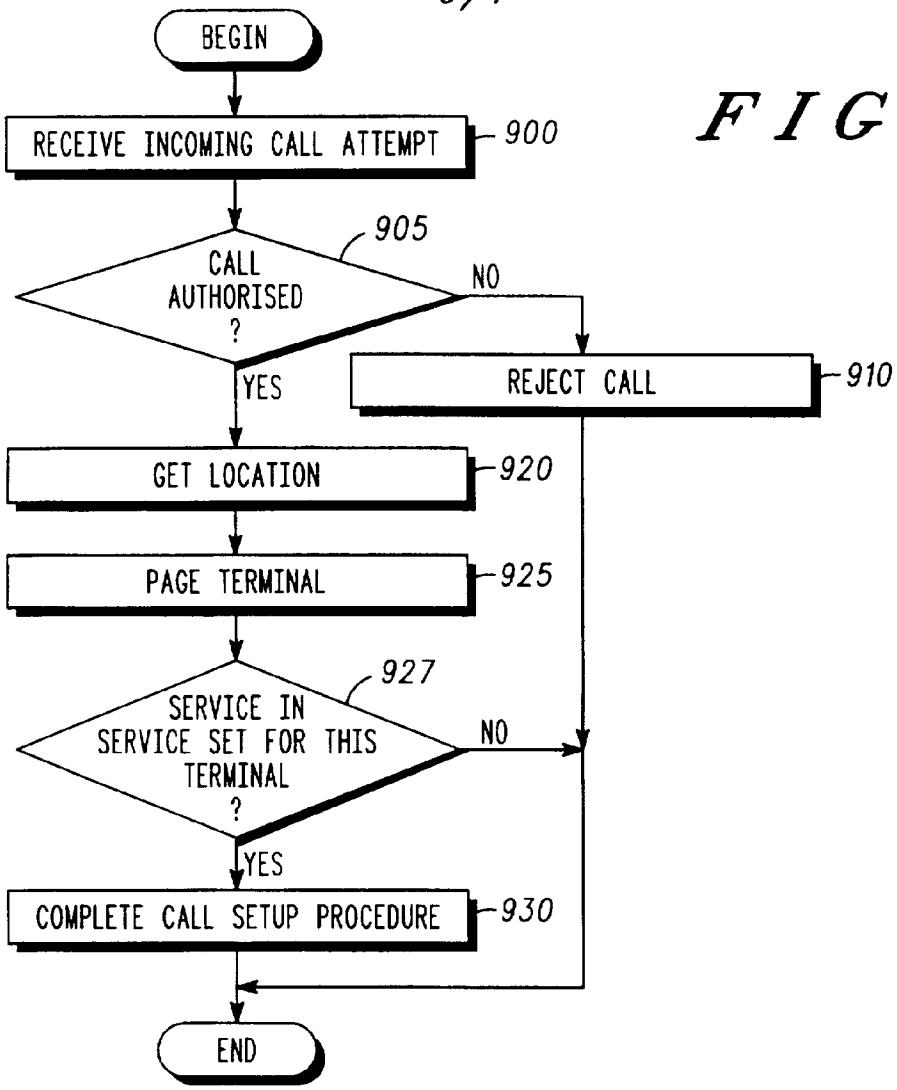
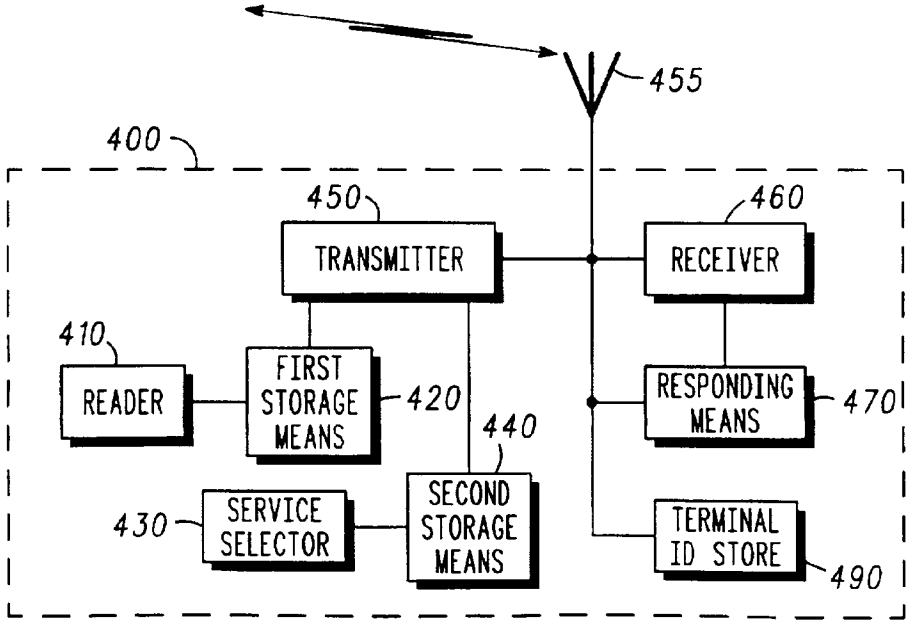

BEGIN
RECEIVE INCOMING CALL ATTEMPT
900
CALL AUTHORISED ?
905
NO
YES
REJECT CALL
910
GET LOCATION
920
PAGE TERMINAL
925
SERVICE IN SERVICE SET FOR THIS TERMINAL ?
927
NO
YES
COMPLETE CALL SETUP PROCEDURE
930
END

FIG.10


455
400
450
TRANSMITTER
460
RECEIVER
410
READER
FIRST STORAGE MEANS
420
440
RESPONDING MEANS
470
430
SERVICE SELECTOR
SECOND STORAGE MEANS
TERMINAL ID STORE
490

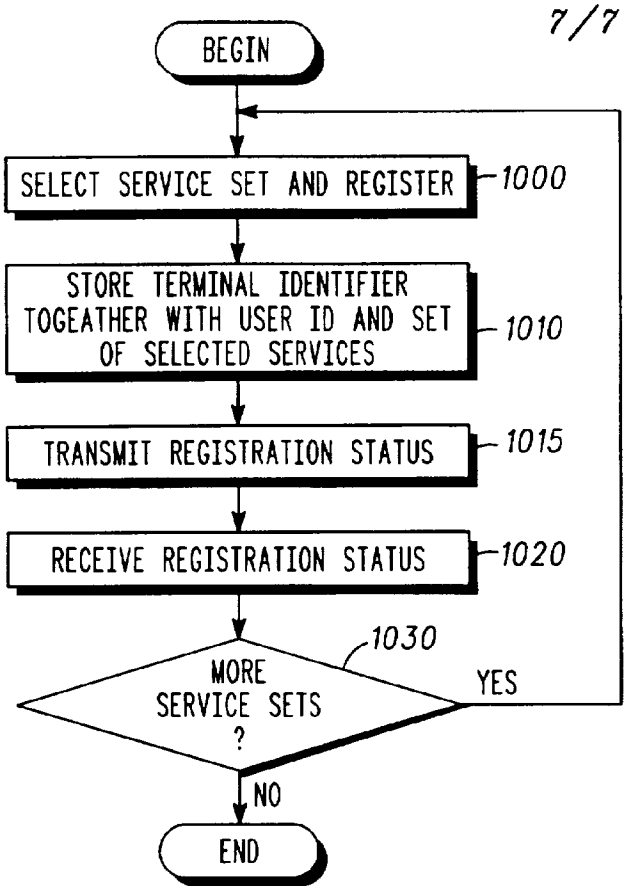
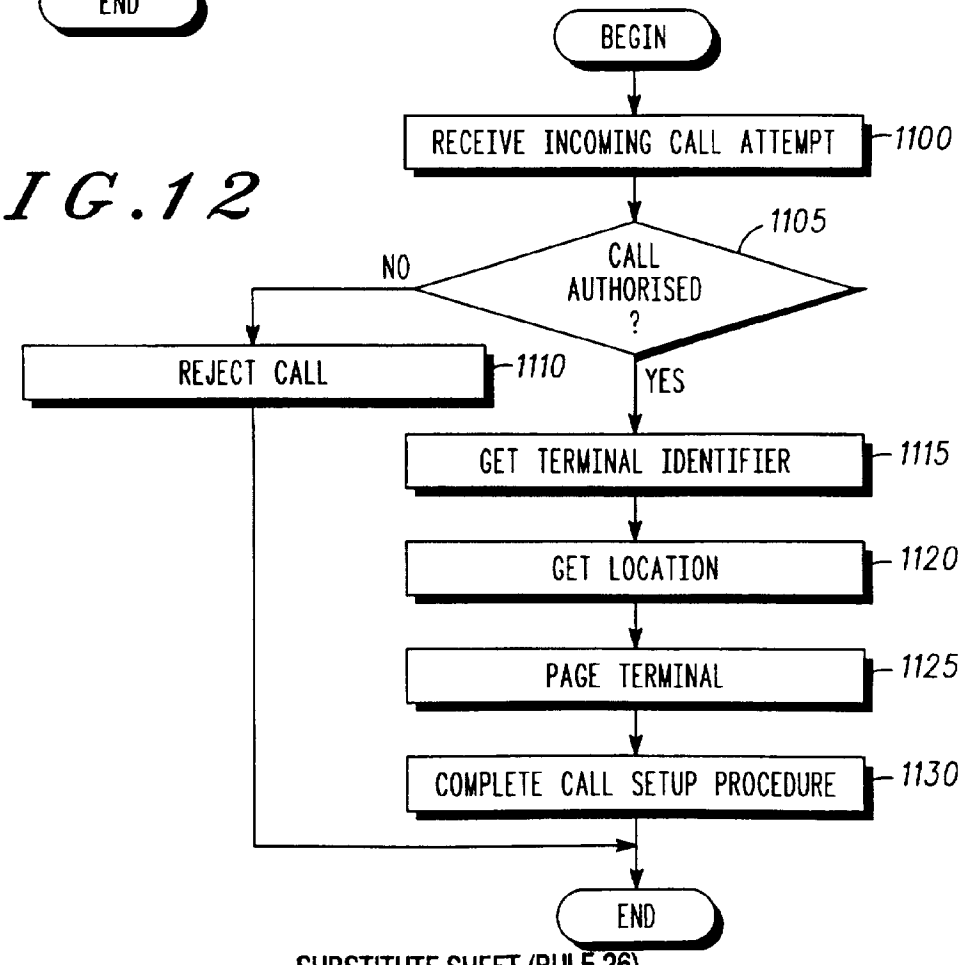

BEGIN
SELECT SERVICE SET AND REGISTER
1000
STORE TERMINAL IDENTIFIER TOGEATHER WITH USER ID AND SET OF SELECTED SERVICES
1010
TRANSMIT REGISTRATION STATUS
1015
RECEIVE REGISTRATION STATUS
1020
1030
MORE SERVICE SETS ?
YES
NO
END

FIG.11

FIG.12


BEGIN
RECEIVE INCOMING CALL ATTEMPT
1100
1105
CALL AUTHORISED ?
NO
YES
REJECT CALL
1110
GET TERMINAL IDENTIFIER
1115
GET LOCATION
1120
PAGE TERMINAL
1125
COMPLETE CALL SETUP PROCEDURE
1130
END

# INTERNATIONAL SEARCH REPORT

Internat Application No
PCT/EP 96/04385

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 H04Q7/22

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 H04Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|---|---|---|
| X | EP 0 685 972 A (NOKIA MOBILE PHONES LTD) 6 December 1995<br>see column 4, line 12 - line 45<br>see column 5, line 2 - line 34<br>see column 6, line 21 - line 46<br>see column 7, line 31 - column 8, line 6<br>see column 8, line 55 - line 58<br>see column 9, line 1 - column 10, line 9<br>see figure 2<br>---<br>-/-- | 1-11 |

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

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"&" document member of the same patent family

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| Date of the actual completion of the international search | Date of mailing of the international search report |
|---|---|
| 29 January 1997 | 13. 02. 97 |

| Name and mailing address of the ISA | Authorized officer |
|---|---|
| European Patent Office, P.B. 5818 Patentlaan 2<br>NL - 2280 HV Rijswijk<br>Tel. ( + 31-70) 340-2040, Tx. 31 651 epo nl,<br>Fax ( + 31-70) 340-3016 | Pieper, T |

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# INTERNATIONAL SEARCH REPORT

Internat Application No
PCT/EP 96/04385

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category ° | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|---|---|---|
| A | GLOBECOM 1990,<br>vol. 1 OF 3, 2 December 1990, SAN DIEGO;<br>INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS,<br>pages 420-426, XP000218765<br>REGNIER J ET AL: "PERSONAL COMMUNICATION SERVICES-THE NEW POTS"<br>see page 420, right-hand column, paragraph 3<br>see page 420, right-hand column, paragraph 7<br>see page 421, left-hand column, paragraph 2 - right-hand column, paragraph 4<br>see page 422, left-hand column, paragraph 2 - paragraph 4<br>see page 422, right-hand column, paragraph 2<br>see page 422, right-hand column, paragraph 5<br>see page 423, left-hand column, paragraph 3 - right-hand column, paragraph 4<br>see figure 2<br>--- | 1,7 |
| A | ERICSSON REVIEW,<br>vol. 70, no. 4, 1 January 1993,<br>pages 140-155, XP000406698<br>SUNDBORG J: "UNIVERSAL PERSONAL TELECOMMUNICATION (UPT) - CONCEPT AND STANDARDISATION"<br>see page 141, right-hand column, paragraph 2 - page 142, left-hand column, paragraph 2<br>see page 143, left-hand column, paragraph 4<br>see page 148, left-hand column, paragraph 2 - right-hand column, paragraph 1<br>see page 150, right-hand column, paragraph 3 - last paragraph<br>see figures 3,12<br>--- | 1,7 |
| A | WO 91 12698 A (MOTOROLA INC) 22 August 1991<br>see page 7, line 19 - page 8, line 7<br>see page 12, line 24 - line 38<br>--- | 1,7 |
| A | WO 95 07009 A (NEDERLAND PTT ;LEIH GEORGE (NL); LEVELT WILLEM GERARD (NL)) 9 March 1995<br>see page 11, line 5 - line 19<br>see page 12, line 15 - line 27<br>---<br>-/-- | 1,7 |

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# INTERNATIONAL SEARCH REPORT

Internat Application No
PCT/EP 96/04385

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category ° | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|---|---|---|
| A | WO 93 07566 A (MOTOROLA INC) 15 April 1993<br><br>see page 2, line 22 - page 3, line 19<br>see page 6, line 11 - page 7, line 12<br>see page 8, line 24 - page 9, line 26<br>see page 9, line 31 - page 14, line 10<br>see page 18, line 3 - line 5<br>see page 18, line 11 - page 19, line 25<br>see page 21, line 1 - line 33<br>see figures 1-3,7<br>--- | 1-3,5,<br>7-9,11 |
| A | EP 0 048 868 A (SIEMENS AG) 7 April 1982<br>see page 4, line 14 - page 5, line 21<br>see page 5, line 32 - line 36<br>----- | 1,7 |

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# INTERNATIONAL SEARCH REPORT

Information on patent family members

Interna' Application No
PCT/EP 96/04385

| Patent document cited in search report | Publication date | Patent family member(s) | | Publication date |
|---|---|---|---|---|
| EP-A-0685972 | 06-12-95 | FI-A- | 942548 | 01-12-95 |
| WO-A-9112698 | 22-08-91 | GB-A- | 2241133 | 21-08-91 |
| | | US-A- | 5404580 | 04-04-95 |
| | | CA-A,C | 2047192 | 15-08-91 |
| | | EP-A- | 0468025 | 29-01-92 |
| | | JP-B- | 6071216 | 07-09-94 |
| | | JP-T- | 4503747 | 02-07-92 |
| | | TR-A- | 24919 | 01-07-92 |
| WO-A-9507009 | 09-03-95 | NL-A- | 9301492 | 16-03-95 |
| | | AU-A- | 7614594 | 22-03-95 |
| | | CN-A- | 1130012 | 28-08-96 |
| | | CZ-A- | 9600549 | 17-07-96 |
| | | EP-A- | 0716796 | 19-06-96 |
| WO-A-9307566 | 15-04-93 | EP-A- | 0560965 | 22-09-93 |
| | | JP-T- | 6503694 | 21-04-94 |
| EP-A-0048868 | 07-04-82 | DE-A- | 3036380 | 13-05-82 |